

WE CLAIM:

1. A transmission device for forwarding aggregate traffic streams towards a destination point, an aggregate traffic stream being comprised of a plurality of packets including respective identifiers allowing to distinguish one packet from another, said transmission device comprising:

- an input for receiving the aggregate traffic streams;
- an output for forwarding the aggregate traffic streams to the destination point;
- a control unit having an input for receiving an acknowledgement message issued from the destination point to notify said transmission device that a certain packet released from said output has been received at the destination point, said control unit being operative to regulate a rate at which packets are released from said output at least in part in dependence upon said acknowledgement message.

2. A transmission device as defined in claim 1, wherein said control unit forwards the aggregate traffic stream to the destination point without adding data elements to the packets of the aggregate traffic streams.

3. A transmission device as defined in claim 2, wherein said acknowledgement message conveys information relative to a packet identifier.

4. A transmission device as defined in claim 3, wherein said control unit includes a data structure, said control unit being operative for recording the identifiers of packets released at said output for forwarding to the destination point in said data structure, said control unit being operative to process said data structure in conjunction with successive acknowledgement messages received from the destination point to regulate the rate at which packets are

released from said output.

5. A transmission device as defined in claim 4, wherein said control unit is operative to process said data structure in conjunction with successive acknowledgement messages received from the destination point in order to determine whether packets forwarded to the destination point have not been received at the destination point.

6. A transmission device as defined in claim 5, wherein if at least one packet has not been received at the destination point, said control unit is operative to reduce a rate of release of the packets from said output.

7. A transmission device as defined in claim 6, wherein said control unit is operative to progressively increase a rate of release of the packets from said output until a packet is not received at the destination point.

8. A method for controlling the flow of an aggregate traffic stream between a transmission device and a destination point, the aggregate traffic stream being comprised of a plurality of packets having respective identifiers allowing to distinguish one packet from another, said transmission device comprising:

- an input for receiving the aggregate traffic streams;
- an output for forwarding the aggregate traffic streams to the destination point;
- said method comprising regulating a rate at which packets are released from said output at least in part in dependence upon an acknowledgement message issued at the destination point to notify said transmission device that at least one packet released from said output has been received at the destination point.

9. A method as defined in claim 8, wherein the regulation of the rate at which packets are released from said output is performed without adding any data to packets released from

said output.

10. A method as defined in claim 9, wherein said acknowledgement message conveys information relative to a packet identifier.

5 11. A method as defined in claim 10, comprising recording the identifiers of packets released at said output for forwarding to the destination point in a data structure, and processing said data structure in conjunction with successive acknowledgement messages received from the destination point to regulate the rate at which packets are released from said output.

10 12. A method as defined in claim 11, comprising processing said data structure in conjunction with successive acknowledgement messages received from the destination point in order to determine whether packets forwarded to the destination point have not been received at the destination point.

15 13. A method as defined in claim 12, wherein if at least one packet has not been received at the destination point, said method comprises reducing a rate of release of the packets from said output.

20 14. A method as defined in claim 13, wherein said method comprises the step of progressively increasing a rate of release of the packets from said output until a packet is not received at the destination point.

25 15. A transmission device for forwarding aggregate traffic streams towards a destination point, an aggregate traffic stream being comprised of a plurality of data packets, said transmission device comprising:

- an input for receiving the aggregate traffic streams;
- a packet generator unit for generating and inserting in the aggregate traffic stream control packets;
- an output for releasing the aggregate traffic streams and

the control packets inserted in the aggregate traffic stream to the destination point,

- a control unit having an input for receiving a control message issued from the destination point allowing the transmission device to determine if a control packet released from said output has been received at the destination point, said control unit being operative to regulate a rate at which data packets are released from said output at least in part in dependence upon said control message.

16. A transmission device as defined in claim 15, wherein each control packet includes sequence information indicative of a sequence of insertion of the control packet relative to other control packets inserted by the packet generator in the aggregate traffic stream.
17. A transmission device as defined in claim 16, wherein said packet generator inserts control packets into the aggregate traffic streams at predetermined intervals.
18. A transmission device as defined in claim 17, wherein said control message is an acknowledgement message that conveys to the transmission device the sequence information of at least one control packet received at the destination point.
19. A transmission device as defined in claim 18, wherein said control unit is operative to process successive acknowledgement messages received from the destination point in order to determine whether control packets forwarded to the destination point have not been received at the destination point.
20. A transmission device as defined in claim 19, wherein if at least one control packet has not been received at the destination point, said control unit is operative to reduce a rate of release of the data packets from said output.
21. A transmission device as defined in claim 20, wherein said

control unit is operative to progressively increase a rate of release of the data packets from said output until a control packet is not received at the destination point.

22. A method for controlling the flow of an aggregate traffic stream between a transmission device and a destination point, the aggregate traffic stream being comprised of a plurality of data packets, said transmission device comprising:

- an input for receiving the aggregate traffic stream;
- an output for forwarding the aggregate traffic stream to the destination point;
- said method comprising:

- a) inserting control packets into the aggregate traffic stream;
- b) regulating a rate at which data packets are released from said output at least in part in dependence upon a control message issued at the destination point allowing the transmission device to determine if a certain control packet released from said output has been received at the destination point.

23. A method as defined in claim 22, wherein each control packet includes sequence information indicative of a sequence of insertion of the control packet relative to other control packets inserted in the aggregate traffic stream.

24. A method as defined in claim 23, wherein said control message is an acknowledgement message representative of the sequence information of at least one control packet received at the destination point.

25. A method as defined in claim 24, wherein said method comprises the step of processing successive acknowledgement messages received from the destination point in order to determine whether control packets have not been received at the

destination point.

26. A method as defined in claim 25, wherein if at least one control packet has not been received at the destination point, said method comprises the step of reducing a rate of release of data packets from said output.

27. A method as defined in claim 26, wherein said method comprises the step of progressively increasing a rate of release of the data packets from said output until a control packet is not received at the destination point.

28. A transmission device for forwarding an aggregate traffic stream towards a destination point, an aggregate traffic stream being comprised of a plurality of packets including respective identifiers allowing to distinguish one packet from another, said transmission device comprising:

- an input for receiving the aggregate traffic stream;
- an output for forwarding the aggregate traffic stream to the destination point;
- a marking unit for selectively marking certain packets of the aggregate traffic streams received at said input with marking data prior to their release from said output, said marking data allowing to distinguish the marked packet from another packet in the traffic stream;
- a control unit having an input for receiving a control message issued from the destination point allowing said transmission device to determine if a certain marked packet released from said output has been received at the destination point, said control unit being operative to regulate a rate at which packets are released from said output at least in part in dependence upon said control message.

29. A transmission device as defined in claim 28, wherein said control message is an acknowledgement message indicating that

a certain marked packet has been received by the destination point.

30. A transmission device as defined in claim 29, wherein said acknowledgement message contains the marked data of a packet.

5 31. A transmission device as defined in claim 30, wherein said control unit includes a data structure, said control unit being operative for recording the identifiers of marked packets released at said output for forwarding to the destination point in said data structure, said control unit
10 being operative to process said data structure in conjunction with successive acknowledgement messages received from the destination point to regulate the rate at which packets are released from said output.

15 32. A transmission device as defined in claim 31, wherein said control unit is operative to process said data structure in conjunction with successive acknowledgement messages received from the destination point in order to determine whether marked packets forwarded to the destination point have not been received at the destination point.

20 33. A transmission device as defined in claim 32, wherein if at least one marked packet has not been received at the destination point, said control unit is operative to reduce a rate of release of the packets from said output.

25 34. A transmission device as defined in claim 33, wherein said control unit is operative to progressively increase a rate of release of the packets from said output until a marked packet is not received at the destination point.

30 35. A method for controlling the flow of an aggregate traffic stream between a transmission device and a destination point, the aggregate traffic stream being comprised of a plurality of packets including respective identifiers allowing to distinguish one packet from another, said transmission device comprising:

- an input for receiving the aggregate traffic streams;
- an output for forwarding the aggregate traffic streams to the destination point;
- said method comprising:

- 5 a) selectively marking certain packets of the aggregate traffic streams received at said input with marking data prior to their release from said output, the marking data allowing to distinguish one marked packet from another marked packet;
- 10 b) regulating a rate at which packets are released from said output at least in part in dependence upon a control message issued at the destination point and allowing said transmission device to determine if a
15 certain marked packet released from said output has been received at the destination point.

36. A transmission device for forwarding aggregate traffic streams towards a destination point, an aggregate traffic stream being comprised of a plurality of packets including respective identifiers allowing to distinguish one packet from another, said transmission device comprising:

- input means for receiving the aggregate traffic streams in the transmission device;
- output means for releasing the aggregate traffic streams from the transmission device toward the destination point;
- control means having an input for receiving an acknowledgement message issued from the destination point to notify said transmission device that a certain packet released from said output means has been received at the destination point, said control unit being operative to regulate a rate at which packets are released from said

output means at least in part in dependence upon said acknowledgement message.

37. A transmission device for forwarding aggregate traffic streams towards a destination point, an aggregate traffic stream being comprised of a plurality of data packets, said transmission device comprising:

- input means for receiving the aggregate traffic streams in the transmission device;
- packet generator means for generating and inserting in the aggregate traffic stream control packets;
- output means for releasing the aggregate traffic streams and the control packets inserted in the aggregate traffic stream to the destination point;
- control means having an input for receiving a control message issued from the destination point allowing the transmission device to determine if a control packet released from said output means has been received at the destination point, said control unit being operative to regulate a rate at which data packets are released from said output at least in part in dependence upon said control message.

38. A transmission device for forwarding an aggregate traffic stream towards a destination point, an aggregate traffic stream being comprised of a plurality of packets having respective identifiers allowing to distinguish one packet from another, said transmission device comprising:

- input means for receiving the aggregate traffic stream into the transmission device;
- output means for releasing the aggregate traffic stream from the transmission device toward the destination point;

- marking means for marking selectively certain packets of the aggregate traffic streams received at said input means with marking data prior to their release from said output means, said marking data allowing to distinguish one marked packet from another packet in the traffic streams;

- control means having an input for receiving a message issued from the destination point allowing said transmission device to determine if a certain marked packet released from said output means has been received at the destination point, said control means being operative to regulate a rate at which packets are released from said output means at least in part in dependence upon said control message.